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### Users Guide to Program UPDATE for the Navy Resource Model,

by John M. Sasser.  
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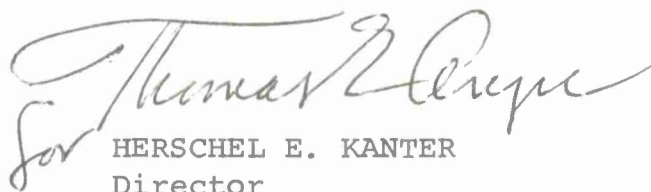
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**CENTER FOR NAVAL ANALYSES  
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**Institute of Naval Studies**

**USERS GUIDE TO PROGRAM UPDATE  
FOR THE NAVY RESOURCE MODEL**

**May 1973**

**John M. Sasser**

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#### ABSTRACT

The Navy Resource Model (NARM) is a system of computer programs which provides the capability to cost a total Department of the Navy program. Attached to the basic cost model are many peripheral programs that serve important functions. This paper focuses on the use of one such program, UPDATE. UPDATE's function is to provide the NARM user with a flexible method of changing the data base. The following is intended to be a guide for the new or casual user as well as a reference for the experienced user.





## TABLE OF CONTENTS

	Page
Introduction. . . . .	1
Methods of altering input file . . . . .	1
Program execution . . . . .	3
Appendix A - Creation of the PE-MC dictionary . . . . .	A-1



## INTRODUCTION

Program UPDATE provides a method for altering cost factor inputs to the Navy Resource Model (NARM). The purpose of this guide is to give the user a detailed reference to the program's operating features and its application. The text that follows requires only that the user be familiar with the basic concepts of the NARM as described in the Users Guide to the Report Generator.

## METHODS OF ALTERING INPUT FILE

The working file of the NARM is composed of Program Unit-Program Element (PU-PE) sequence rows. Within each row there are presently 12 positions corresponding to the 12 years represented on the file. Program UPDATE allows the user to change these rows in five different ways:

- 1) Deletions
- 2) Changes
- 3) Algebraic Additions
- 4) Percentage Adjustments
- 5) Substitutions or Insertions

A description of each of these forms follows. It is suggested that the reader examine sample update cards displayed in figure 1 for a general view of the card layout.

Deletions permit the elimination of sequence rows. A maximum of 100 deletions are permitted. In cases that exceed this limit the first 100 deletions will be made, and a diagnostic will appear showing the overflow.

Changes allow for a correction to particular year(s) of the PU-PE sequence row. The value on the update card will be substituted in the appropriate year on the file. Only years with non-blank entries on the update card will be changed on the file. Zeroes in the correct fields will change the year to a zero value while blanks will leave the year unchanged.

Algebraic Additions are similar to changes. Additions will allow the user to add the data for a particular year on the update card to the corresponding row year on the file. Blanks in this case are treated as zeroes. Negative signs may also be employed. The number of changes and additions in the update run must not exceed 750. In cases that exceed the maximum, the first 750 will be processed, and the overflow noted in a diagnostic.

Percentage Adjustments will allow sequence rows to be altered by a multiplicative factor. The factor may be applied to all or one particular year of the row. The program is capable of handling as many as 100 percentage adjustments.



Substitutions or Insertions allow for the replacement of an entire PU-PE sequence row by an update card. If the row doesn't already exist on the old file, the program will insert the data in its proper place.

For Deletions, Percentage Adjustments, and Insertions, the sequence rows can be updated by logical key. In other words, if only a few of the keys are designated with values on the update card with the remaining keys left blank, all PU-PE sequence rows that have matching key values for the keys designated will be updated regardless of the value of the remaining keys. The other update forms require the full PU-PE sequence values. In most instances, however, the PE is zero. It is non-zero only for forces and program related factors, such as aircraft manning factors.

Sequence rows can be manipulated by more than one update card within a run. The execution order of the update forms is exactly the order presented in the description above. The user must be careful to take note of the execution order to obtain the desired result.

## PROGRAM EXECUTION

The operation of UPDATE requires the job set-up illustrated in figure 2. A general description of the cards is presented in table 1 in the order of placement within the data deck. Figure 3 displays a sample input card deck that results in the program output shown in figure 4. A description of the more important parameters and operations of the model follows.

The update control card defines the scope of the update. It informs the program of the location of the update data, the number of years to be worked with, and the forms of updates that will be used. Particularly, flags must be set if percentage factor adjustments are included in the run or insertions are to be updated by logical key. The replacement data sort feature simply allows the program to forgo sorting the input update data if it is presorted.

The logical units of the tapes involved are preset by the program. Unit 1 is reserved for the input WDATA tape. Unit 2 holds the output (updated) WDATA tape. Unit 3 is used for the update card images if they are stored on tape. Unit 4 is reserved for the Program Element - Mission Category (PE-MC) Dictionary. Finally, logical unit 69 holds the program load-and-go tape.

The dictionary to be placed on LU 4 is required for all runs. Its purpose is to provide the WDATA file with the correct key 9 values. Due to the lack of space on the update card for the nine key values of the PU-PE codes, another method for updating this key was needed. Because the program element is associated uniquely with a mission category, a PE-MC dictionary is used. Dictionary maintenance should occur with every new Report Generator PE dictionary sent from OP-904. Their dictionary contains the mission category in columns 73 and 74. Because our Report Generator dictionaries are stored on Macrosim tapes, and Macrosim uses columns 73-80 for card sequencing, a separate PE-MC has to be constructed from their PE dictionary. The Generalized Extract Program is ideally suited for this purpose. A sample of the PE-MC dictionary and the job set-up for its construction are found in appendix A.

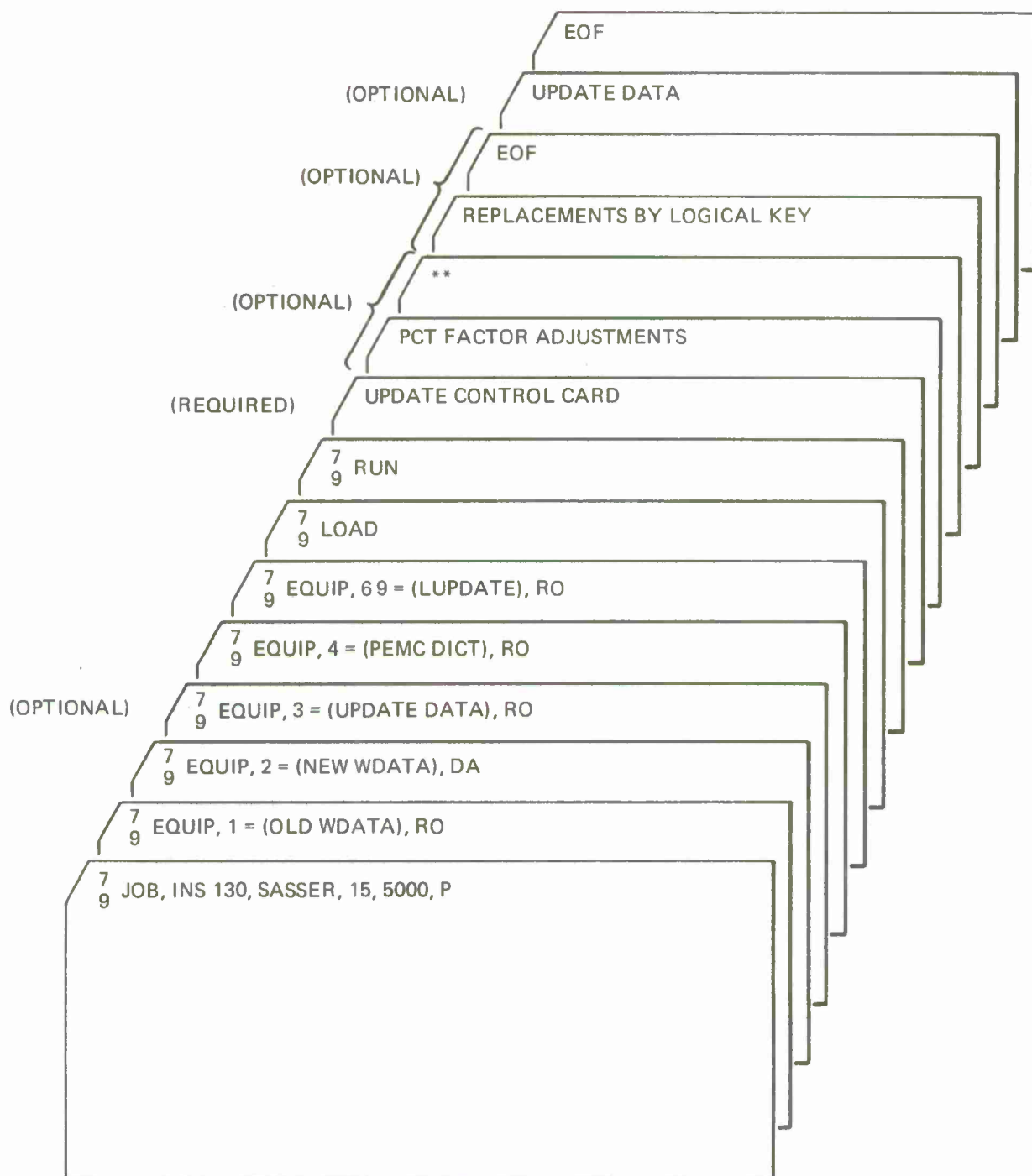


FIG. 2: DECK STRUCTURE

TABLE 1  
DESCRIPTION OF CARDS

Columns	Format	Description
UPDATE CONTROL CARD (Required)		
1-2	I2	Logical unit of update data = 60: card reader = 03: tape = blank: default to card reader
3-4	I2	Number of years on old master WDATA file (Currently 11)
5-6	I2	Number of years on updated master WDATA file (Currently 11)
6	I1	Print options = blank or 0: no print = 1: ships only = 2: aircraft only = 3: ships and aircraft = 5: thruput only = 6: ships, aircraft, and thruput = 7: variable support only = 9: everything
8	I1	Print of update data = blank or 0: printed = 1: not printed
9	I1	Replacement data sort = 0: sorted = 1: not sorted
10	I1	Percentage Factor Adjustments = blank or 0: option not used = 1: option used.
11-14	I4	First year on WDATA tape. Default to 1971.
15	I1	Logical Key Replacements = 0: option not used = 1: option used

Columns	Format	Description
PERCENTAGE FACTOR CARDS (Optional) (Maximum: 100 cards)		
1-2	2X	Card identification or blank
3	I1	Key 1 value
4	I1	Key 2 value
5-6	I2	Key 3 value (key values may be left blank)
7-8	I2	Key 4 value
9-10	I2	Key 5 value
11-15	5X	Blank or identification
16-20	I5	Sequence number
21-23	3X	Blank or identification
24-25	I2	Year (1-12) of WDATA to adjust = blank: adjust all years
26 - 35	F10.0	Multiplicative factor
Last card of set		
1-2	A2	**Signals end of percentage adjustments



Columns	Format	Description
REPLACEMENTS BY LOGICAL KEY		
1	I1	Key 1 value
2	I1	Key 2 value
3-4	I2	Key 3 value (keys may be left blank)
5-6	I2	Key 4 value
7-8	I2	Key 5 value
9-16	8X	Blank or identification
17-19	I3	Sequence row
20	I1	Spread code = 1: detain first year spread to all years = blank or zero: data not spread
21-25	Integer or fixed first year data	
26-30	Integer or fixed second year data (spread code not equal to 1)	
31-35	Integer or fixed third year data (spread code not equal to 1)	
.	.	.
.	.	.
.	.	.
75-80	Integer or fixed twelfth year data (spread code not equal to 1)	

Last card of set: End of File is used to signal end of logical key update cards.

Columns	Format	Description
DELETIONS (Maximum: 100 cards)		
1	I1	Key 1 value
2	I1	Key 2 value
3-4	I2	Key 3 value (keys may be left blank)
5-6	I2	Key 4 value
7-8	I2	Key 5 value
9	A1	Update code = D: deletion
10-16	I6	Program element (may be blank)
17-19	I3	Sequence row = value: will delete only those sequence rows = blank: delete all sequence rows
20-80		Blank

Columns	Format	Description
CHANGES, ADDITIONS, REPLACEMENTS, INSERTIONS		
1-8	I8	Program unit code
9	A1	Update code = Blank: Insertion or Replacement = A: Algebraic Addition = C: Change
10-16	I6	Program element
17-19	I3	Sequence row
20	I1	Spread code = 1: data in first year spread to all years = blank or zero: data not spread
21-25	Integer or fixed first year data	
26-30	Integer or fixed second year data (spread code not equal to 1)	
.	.	.
.	.	.
.	.	.
75-80	Integer or fixed twelfth year data (spread code not equal to 1)	

```

JOB,INS130,SASSER,15,5000,P
EQUIP,1={WD-1-5F},RO
EQUIP,2={NEW WDATA},DA
EQUIP,4={PEMC DICT},RO
EQUIP,69={LUPDATE},RO
LOAD
RUN,15,5000
6011111 1 1
PU1 11 1.5
PU22 04 3 4 .5
**
1 05 41 6
11 31 5
11050125 51 7
11021405 331 2
1 02 321 50
05 361 25
02 241412 11 3
11020405A241412 11 15
11040608 242312 11 6
11030405C 12 -1, 3 0 4,2 2,2 1.1
11048305D 18

```

FIG. 3: ILLUSTRATIVE INPUT

UPDATE RUN -- 03/12/73

INPUT DATA ON LU 60

11 YEARS OF DATA ON WDATA INPUT FILE

11 YEARS OF DATA ON WDATA OUTPUT FILE

PU TYPE 1 TO BE PRINTED

# TABLE OF FACTOR DATA

PU	SEQUENCE	YEAR	FACTOR
10-0-0-0	11	0	1.500
22-0 4-0	3	4	0.500

# DATA TO BE UPDATED BY LOGICAL KEY

1 05	-0	4 1	6.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
11	-0	3 1	5.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
11050125	-0	5 1	7.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
11021405	-0	33 1	2.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
1 02	-0	32 1	50.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
05	-0	36 1	25.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
02	241412	1 1	3.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00

# UPDATE DATA

11020405A	241412	1 1	15.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
11030405C	-0	12 0	-1.00	3.00	-0.00	0.00	4.20	2.20	1.1
11048305D	-0	18							

# REPLACEMENT/AND UPDATE DATA

PU	PE	SEQ	DATA
11040608	24231208	1	6.00 6.00 6.00 6.00 6.00 6.00

FIG. 4: ILLUSTRATIVE OUTPUT

## APPENDIX A

## APPENDIX A

### CREATION OF THE PE-MC DICTIONARY

The PE-MC dictionary used by program UPDATE is constructed from the Report Generator's Program Element dictionary sent to CNA from OP-904. The dictionary contains for each PE, a title and a mission category (fiscal guidance category). The dictionary card layout is shown below.

<u>Columns</u>	<u>Description</u>
1-6	Program element
8-72	PE title
73-74	Mission category

The Generalized Extract Program (GEP) can reformat this dictionary into a format acceptable to UPDATE. The new dictionary format is as follows:

<u>Columns</u>	<u>Description</u>
1-6	Program element
8-9	Mission category
10-80	Blank

The computer control data deck used to initiate this GEP run is displayed in figure A-1.

```

1...5...10...15...20...25...30...35...40...45...50...55...60...65...70...75...80
9JOB,INS130,SASSER,5,2000.P
9EQUIP,1=(PE-MC DICT),DA
9EQUIP,69=(GEP-INTRPT),R0
9LOAD
9RUN
60      01      80      1      80      1
00  1-6T,1X,73-74T,71X
50  1-6,8-9
88  EOF
  
```

FIG. A-1: GEP JOB SET-UP

U15467

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